

IN THE CLAIMS:

1. (currently amended) A method of polishing a layer of a substrate, comprising:

providing a liquid medium having a pH between 4 and 12 to an interface between a ~~first~~an oxide layer of a substrate and a fixed abrasive polishing pad, said liquid medium including a pH controlling substance including at least one of an acid and a base, said liquid medium further including a ~~carbonate~~, and a stabilizer additive including at least one acid selected from the group consisting of amino acids and polyacrylic acid, and a carbonate including carbonate ions having a concentration of between about 0.005 % and about 0.25 % by weight relative to said liquid medium; and

polishing said first layer of said substrate by at least one of moving said substrate relative to said polishing pad or moving said polishing pad relative to said substrate to remove a first portion of said oxide layer with an efficient removal rate and to expose a surface of a second portion of said oxide layer underlying said first portion without substantially scratching said surface of said second portion.

2. (previously presented) The method of claim 1 wherein said pH controlling substance is a base, and said stabilizer additive includes at least one amino acid, and said first layer includes an oxide layer.

3. (cancelled)

4. (withdrawn) The method of claim 1 wherein said pH controlling substance is an acid, said pH of said liquid medium ranges between about 4.2 and about 5, said stabilizer additive includes polyacrylic acid, and said first layer includes an oxide layer.

5. (previously presented) The method of claim 1 wherein said pH controlling substance is a base, said pH is adjusted to a range between 9.5 and 12, and said stabilizer additive includes an amino acid.

6. (currently amended) The method of claim ~~3~~ 2 wherein said stabilizer additive is selected from the group consisting of L-proline, glycine, lysine and polyacrylic acid.

7. (previously presented) The method of claim 5 wherein said base includes a hydroxide of an alkali earth metal.

8. (previously presented) The method of claim 5 wherein said base is selected from the group consisting of hydroxides of alkali earth metals and ammonium hydroxide.

9. (previously presented) The method of claim 8 wherein said carbonate includes a carbonate salt of said alkali earth metal.

10. (previously presented) The method of claim 9 wherein said base includes potassium hydroxide and said carbonate salt includes potassium carbonate.

11. (previously presented) The method of claim 9 wherein said carbonate is provided in said liquid medium by adding said carbonate salt to said liquid medium.

12. (currently amended) The method of claim 3-1 wherein said fixed abrasive pad includes at least one of alumina, ~~and~~ or ceria.

13. (original) The method of claim 12 wherein said polishing pad is moved in a linear direction relative to said substrate.

14. (currently amended) The method of claim 3-1 wherein said step of moving is performed to polish said first layer of said substrate until a second layer underlying said first layer is exposed.

15. (previously presented) The method of claim 14 wherein said first layer comprises an oxide of silicon, said second layer comprises silicon nitride and said step of moving is performed until said first layer is planarized to a level of said second layer.

16. (currently amended) A chemical mechanical polishing method of planarizing an oxide layer of a semiconductor substrate, comprising:

providing a semiconductor substrate having an underlying layer and an exposed oxide layer ~~having at least one of a step height difference above said underlying layer or an uneven overfill above~~ covering said underlying layer, said oxide layer having a minimum thickness greater than about 200 angstroms at any point above said underlying layer;

contacting said exposed oxide layer of said substrate with a fixed abrasive pad;

providing a liquid medium having a pH between about 9.5 and 12 to an interface between said exposed oxide layer of said substrate and said fixed abrasive pad, said liquid medium including a base selected from the group consisting of hydroxides of alkali earth metals and ammonium hydroxide, said liquid medium further including ~~a carbonate and~~ a stabilizer additive comprising at least one acid selected from an amino acid and polyacrylic acid, and a carbonate including carbonate ions having a concentration of between about 0.005 % and about 0.25 % by weight relative to said liquid medium; and

polishing said exposed oxide layer by at least one of moving said substrate relative to said fixed abrasive pad or moving said fixed abrasive pad relative to said substrate to remove a first portion of said oxide layer with an efficient removal rate and to expose a surface of a second portion of said oxide layer underlying said first portion without substantially scratching said surface of said second portion.

17. (previously presented) The method of claim 16 wherein said stabilizer additive is selected from the group consisting of L-proline, glycine, lysine and polyacrylic acid.

18. (currently amended) The method of claim 17 wherein said second portion of said exposed oxide layer includes material formed in trenches within said underlying layer and said first portion includes material overlying said trenches, such that said polishing is performed to planarize said oxide layer until a surface of said underlying layer is exposed~~to remove said step height difference and said uneven overfill above said second layer.~~

19-22. (cancelled)

23. (currently amended) The method of claim ~~22~~ 16, wherein said ~~liquid medium contains carbonate ions of said carbonate in a quantity~~ have a concentration of between about 0.02 % and about 0.06 % by weight relative to said liquid medium.

24. (currently amended) The method of claim 16, wherein said ~~liquid medium contains carbonate ions~~ have a concentration of said carbonate in a quantity between about 0.02 % and about 0.06 % by weight relative to said liquid medium.

25. (new) The method of claim 16, wherein said minimum thickness of said oxide layer is at least about 500 angstroms.

26. (new) The method of claim 1, wherein said fixed abrasive pad supplies at least substantially all of an abrasive component utilized during said polishing step.

27. (new) The method of claim 26, wherein said removal rate is comparable to that which would be obtained if said abrasive component had been supplied substantially in said liquid medium.

28. (new) The method of claim 1, wherein said liquid medium has no appreciable quantity of abrasive particles when provided to said interface.